IN THE CLAIMS:

Cancel claims 19 and 20 without prejudice or disclaimer.

Please amend the claims as follows:

Claim 1. **(Presently amended)**

A method for decomposing an input signal into a baseline signal and a residual output signal, comprising the steps of:

(a) receiving an input signal into a processor;

(b) determining a monotonic residual segment with strictly negative minimum and strictly positive maximum and a baseline segment wherein said segments are defined on a time interval, the time interval comprising the interval between two successive extrema of the input signal and wherein the input signal on that interval is the sum of the baseline and the monotonic residual segments; and

(c) producing a baseline output signal and a residual output signal, wherein the baseline output signal is obtained from the baseline segment and the residual output signal is obtained from the monotonic residual segment as determined in step (b), such that the sum of the baseline and residual output signals is equal to the input signal thereby forming a decomposition of the input signal.

Claim 2. **(Original)**

The method as described in claim 1, wherein the residual output signal produced in step (c) is a proper rotation.

Claim 3. **(Presently amended)**

The method as described in claim 1, wherein:

~~(a)~~ (d) the residual monotonic segment is monotonic with strictly negative minimum and strictly positive maximum; and

~~(b)~~ (e) the baseline and residual monotonic ~~segments~~ segment are:

(1) determined on ~~a~~ the time interval comprising the interval between two successive extrema of the input signal, and

(2) the baseline segment comprises a transformation of the input signal, the transformation being defined on the time interval.

Claim 4. **(Original)**

The method as described in claim 3, wherein the transformation is a linear transformation.

Claim 5. (Presently amended)

The method as described in claim 1, including the additional steps of of iteratively reapplying steps (a) through (c) to further decompose each produced baseline output signal by treating each successive baseline output signal as an input signal.

Claim 6. (Original)

The method as described in claim 5, including the step of continuing the iterative decomposition until a pre-determined number of iterations have been completed.

Claim 7. (Original)

The method as described in claim 5, including the step of continuing the iterative decomposition until a monotonic trend baseline signal is obtained.

Claim 8. (Presently amended)

The method as described in claim 5, wherein the iterative decomposition produces a resultant relatively low frequency baseline trend signal and a set of proper rotation residual signals, one for each iteration and each proper rotation residual signal of the set of proper rotation residual signals having a ~~successfully~~ successively lower relative frequency.

Claim 9. **(Presently amended)**

The method as described in claim ~~1~~ 8, including the step of determining at least one instantaneous frequency estimate from ~~the~~ a proper rotation residual signal of the set of proper rotation residual signals using a Hilbert transform.

Claim 10. **(Presently amended)**

The method as described in claim ~~1~~ 8, including the step of determining at least one instantaneous amplitude estimate from ~~the~~ a proper rotation residual signal of the set of proper rotation residual signals using a Hilbert transform.

Claim 11. **(Original)**

The method as described in claim 1, wherein the input signal includes a sequence of data.

Claim 12. **(Original)**

The method as described in claim 1, wherein the input signal is continuously received and the decomposition of the input signal in the interval between two successive extrema is performed upon receipt of the latter of the two successive extrema by the processor.

Claim 13. (Presently amended)

The method as described in claim 1, further including the steps of;

~~(a)~~ (d) obtaining a sequence of quantified feature values by quantifying at least one feature of a sequence of waveforms derived from at least one proper rotation signal;

~~(b)~~ (e) analyzing the resulting sequence of quantified feature values to determine which values satisfy a pre-determined set of constraints; and

~~(c)~~ (f) constructing at least one filtered signal from the sequence of waveforms corresponding to those values that satisfy the pre-determined set of constraints.

Claim 14. (Original)

The method as described in claim 1, wherein the input signal consists of samples evenly spaced in time.

Claim 15. (Original)

The method as described in claim 1, wherein the input signal consists of samples unevenly spaced in time.

Claim 16. **(Presently amended)**

The method as described in claim 1, wherein the input, baseline output and residual output signals are multi-dimensional.

Claim 17. **(Original)**

The method as described in claim 1, including the step of preprocessing or applying a transformation to the input signal prior to step (b).

Claim 18. **(Original)**

The method as described in claim 1, including the additional step of estimating the information content or complexity of the input signal by counting produced proper rotation signals in a time window.

Claims 19-20. **(Cancelled)**

Claim 21. **(Presently amended)**

A method of determining at least one instantaneous frequency estimate from a proper rotation signal, including the steps of:

(a) inputing a proper rotation signal to a processor;

(b) determining a zero-crossing and a local extremum of the proper rotation signal;

and

(c) ~~applying linear interpolation to the proper rotation signal between the zero-crossing and the local extremum to determine~~ determining an instantaneous frequency estimate of the proper rotation signal by interpolating the proper rotation signal between the zero-crossing and the local extremum .

Claim 22. **(Presently amended)**

A method of determining at least one instantaneous frequency estimate from a proper rotation signal, including the steps of:

(a) inputing a proper rotation signal to a processor;

(b) extracting an amplitude-normalized half wave from the proper rotation signal; and

(c) ~~applying an arcsine function to the amplitude-normalized half wave to determine~~ determining an instantaneous frequency estimate of the proper rotation signal by applying an arcsine function to the amplitude-normalized half wave .